

and considerable loss of life. It was particularly severe in the northern Departments, whence come reports of numbers of persons killed and injured. Telegraph and telephone lines were blown down, cutting communications generally. The storm off the coast stopped virtually all marine traffic * * *.—*Brooklyn Eagle*, March 9, 1922.

Paris, March 23.—On the second day of spring surface transportation in Paris was demoralized by a small blizzard worse than any seen during the winter, and all France is white with an unusual snow.—*Brooklyn Eagle*, March 23, 1922.

Switzerland.—Geneva, March 15.—Winter in the Swiss Alps has been so severe that scores of wild boars, wolves, and other animals have been driven to the towns and lowlands in search of food * * *.—*New York Evening Mail*, March 15, 1922.

Italy.—Venice, March 23.—A Central News dispatch from Venice says that a tidal wave late last night inundated the city, the water rising to a depth of more than 3 feet in some of the public squares.—*Washington Post*, March 24, 1922.

Genoa, March 25.—The tidal wave which the past few days has swept the Adriatic shores of Italy to-day shifted to the Mediterranean side and extended throughout the Italian Riviera. Many of the railroads and streets of Genoa were inundated, forcing traffic to deviate in order to reach the center of the city. Ships anchored at various places along the coast suffered damage.—*Associated Press*.

Arabia.—Aden.—It is stated in the *Times* on March

28 that unusually heavy rains have filled all but one of the historic reservoirs of Aden.¹

Africa.—Tetuan, Morocco, March 24.—A severe snowstorm and intense cold has interrupted the movements of the Spanish troops in this vicinity. Communications with the outlying posts have been cut, as the hills surrounding the city are covered with a thick layer of snow.—*Washington Post*, March 24, 1922.

Lourenco, Portuguese East Africa, March 4.—Serious loss of life and damage to property was caused by a tornado which recently swept the seaport town of Chinde, in this territory, destroying the Government office and many other buildings and causing the sinking of numerous launches and other craft in the port * * *.—*Washington Star*, March 5, 1922.

Japan.—Tokio, March 1.—Tokio to-day was in the grip of a severe cold wave and snowstorm, according to dispatches * * *.—*United Press*, March 1, 1922.

Hawaii.—Honolulu, March 19.—Semitorrential rains which have visited the Hawaiian Islands during the past week caused much damage and marooned many tourists and sightseers * * *. Extremely rough weather accompanied the rain, interisland vessel captains reporting the hardest voyages in years.—*Washington Evening Star*, March 19, 1922.

Brazil.—There were destructive floods in the States of Rio de Janeiro and Sao Paulo. * * * While in the northeast the cotton crop is suffering from lack of rain, the rice crop in the South is being damaged by abnormally heavy precipitation.¹

¹ Meteorological Magazine, April, 1922.

DETAILS OF THE WEATHER IN THE UNITED STATES.

GENERAL CONDITIONS.

The outstanding feature of the month was perhaps the excess of rainfall as shown in detail on the inset of Chart V. Heavy rains in March are due to the course taken by cyclonic systems of wind circulation which cross the United States.

During the current month these systems moved from Texas northeastward, crossing the Mississippi in the vicinity of Cairo, Ill., moving thence up the Ohio Valley, and then passing almost directly eastward to the coast. By a movement such as described these storms cross successively the western tributaries of the Mississippi, south of the Missouri, and thus precipitate a large quantity of water in the several basins so crossed. Continuing up the Ohio Valley, the river of the same name must also reach flood stage. While the quantity of water contributed by the storms of the current month was not in itself sufficient to produce a large flood, it doubtless laid the foundation for the great flood which, at this writing (May 1), is passing down the lower Mississippi.

Another exceptional feature of the weather was the high mean pressure over the outlet through which pass the great majority of storms which traverse the United States, viz, New England and the St. Lawrence Valley. Reference to the inset of Chart II, shows the extent to which pressure was above the mean in that locality. This excess was due to the fact that more than the usual number of anticyclones passed over the region in question, which may be simply another way of expressing the belief that the flow of polar air equatorward, for some reason, followed the Hudson Bay-Halifax route.

East of the Rocky Mountains the month was warm and wet; to the westward it was cold and relatively dry. The usual details follow.

CYCLONES AND ANTICYCLONES.

By W. P. DAY, Observer.

The month was unusually active, both HIGHS and LOW exceeding the normal. Most of the important storms began as secondary developments over the southern slope of the Rockies or in the Great Basin and moved east-northeast to pass off the north Atlantic coast. High-pressure areas were not so strong as during the preceding month and few important ones were charted south of Canada, but the total number charted was the same in each case.

LOWS.	Al- berta.	North Pa- cific.	South Pa- cific.	North- ern Rocky Moun- tain.	Colo- rado.	Texas.	East Gulf.	South At- lantic.	Central.	Total.
March, 1922.....	6.0	6.0	1.0	.....	7.0	.....	.....	3.0	1.0	24.0
Average number, 1892-1912, in- clusive.....	3.6	2.1	1.1	0.3	1.9	1.3	0.4	0.3	0.7	11.8

HIGHS.	North Pacific.	South Pacific.	Al- berta.	Plateau and Rocky Moun- tain region.	Hud- son Bay.	Total.
March, 1922.....	5.0	3.0	5.0	.....	1.0	14.0
Average number, 1892-1912, inclusive	0.9	0.7	5.6	0.9	0.5	8.5

FREE-AIR CONDITIONS.

By W. R. GREGG, Meteorologist.

As indicated in Tables 1 and 2, free-air conditions at all six kite stations and at all altitudes were, for the month